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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,679	08/28/2003	Takakazu Tanaka	003500.017516.	5645
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FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112			DOTE, JANIS L	
			ART UNIT	PAPER NUMBER
			1756	

DATE MAILED: 09/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/649,679	Applicant(s) TANAKA ET AL.	
	Examiner Janis L. Dote	Art Unit 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/7/03</u> . | 6) <input type="checkbox"/> Other: _____ |

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1. The information disclosure statement (IDS) submitted on Nov. 7, 2003, has been considered by the examiner. Applicants' statement of relevancy for Japanese Patent H5-49106 is found at page 3, line 20, to page 4, line 13, of the instant specification.

The examiner has also considered the three pending US applications 10/422,733, 10/647,205, and 10/647,274, listed in the IDS filed on Nov. 7, 2003.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

In Fig. 4, the reference signs 21 and 22. See the specification, page 56, lines 25-26.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

In Fig. 4, reference characters 11 and 12.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The examiner notes that the following terms are means-plus-function limitations covered by 35 U.S.C. 112, sixth paragraph:

"exposure means," "charging means," "developing means,"

"transfer means," and "cleaning means" recited in instant

claims 21-30. No structures for the terms are recited in the

claims. The only definitions for the "developing means,"

"cleaning means," and "transfer means" are provided by instant

Fig. 4. The apparatus in Fig. 4 comprises a developing means 5, a charging means 3, cleaning means 9, and a transfer means 6.

See the instant specification, page 54, line 23, to page 56,

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line 11. The instant specification further discloses at page 56, lines 9-10, that the "charging means 3" in Fig. 4 can be a "contract charging means making use of a charging roller or the like as shown in Fig. 4." No other structure of a charging means is disclosed in the specification. The specification does not define the term "exposure means." However, the specification, at page 57, lines 2-8, discloses that the exposure light 4 in Fig. 4 can be a laser beam, an LED array or a liquid-crystal shutter array.

5. The instant specification at page 16, line 18, to page 17, line 2, discloses that the divalent aromatic carbocyclic group or divalent aromatic heterocyclic group recited in the instant claims also includes divalent aromatic carbocyclic groups or divalent aromatic heterocyclic groups "formed by bonding through a single bond, a substituted or unsubstituted alkylene group having 1 to 4 carbon atoms, a substituted or unsubstituted silylene group having 1 to 4 silicon atoms, an oxygen atom or a sulfur atom."

The instant specification at page 25, lines 20-23, defines the phrase "synthesized by successive synthesis" as being synthesized by "a method for synthesis in which the reaction of a raw material with a material to be reacted is carried out in a

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multi-stage process to form a single compound as a chief product."

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-30 are indefinite in the phrase "contains one or two or more kind(s) of charge-transporting material" because it is not clear what is meant by the term "kind(s)." It is not clear whether the "kind(s)" refers to a species of charge-transporting compound or a property.

8. Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted element is an electrically conductive

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support or a support comprising an electrically conductive layer.

Instant claims 1-30 recite an electrophotographic photosensitive member comprising a support and a photosensitive layer provided on the support.

The claims fail to recite that the member has an electrically conductive support or a support comprising an electrically conductive layer. It is not clear how an electrophotographic photosensitive member that lacks a conductive support can form an electrostatic latent image. The conductive support is an essential component of an electrophotographic element to form an "electrostatic latent image." See Diamond, Handbook of Imaging Materials, pp. 395-396. Diamond Figure 9.7 illustrates a typical dual-layer photoreceptor, which comprises an electrode layer. Diamond discloses that the photoreceptor may comprise a single layer that functions as a charge generation layer and a charge transport layer. Diamond, page 395, lines 25-27. All the examples in the instant specification exemplify photosensitive members comprising an aluminum cylinder as the support. See the instant specification, page 57, lines 21-22. There is no objective evidence on the present record showing that electrostatic latent images can be formed on an

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electrophotographic photosensitive member comprising a non-conductive or insulating substrate.

9. The following is a quotation of the first paragraph of 35

U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 1-30 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. An electrically conductive support or a support comprising an electrically conductive layer is critical or essential to the practice of the invention. The instant claims do not recite the presence of an electrically conductive support or a support comprising an electrically conductive layer. Therefore, the instant claims are not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

Instant claims 1-30 recite electrophotographic photosensitive members as described in paragraph 8, supra, which is incorporated herein by reference.

For the reasons given in paragraph 8, supra, it is not clear how electrophotographic photosensitive members that lack

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an electrically conductive substrate can form an electrostatic latent image. There is no objective evidence on the present record showing that electrostatic latent images can be formed on a photosensitive member comprising a non-conductive or insulating substrate. All the examples in the instant specification and in the prior art (e.g., Diamond, supra) exemplify electrophotographic photosensitive members (i.e., photoreceptors) comprise an electrically conductive support. See the instant specification, page 57, lines 21-22. Thus, all the evidence in the instant specification indicates that an electrophotographic photosensitive member that does not comprise an electrically conductive support cannot form an electrostatic latent image. Hence, on the present record, it would require undue experimentation for one of ordinary skill in the art to make and use an electrophotographic photosensitive member that does not have an electrically conductive support to form an electrostatic latent image. The full scope of the instant claimed subject matter cannot be practiced based on the limited disclosure provided by the instant specification.

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f), or (g) prior art under 35 U.S.C. 103(a).

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14. Claims 1-5 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 3,265,496 (Fox).

Fox discloses an electrophotographic photoconductor comprising an electrically conductive support and a photoconductive layer comprising a polyarylamine compound that meets chemical formula (2) recited in instant claim 2. See col. 3, lines 32-40; example 1-synthesis of polymer No. 1 at col. 6; and example 6 at col. 7. Polymer No. 1 composition comprises a polyarylamine compound that comprises 7 nitrogen atoms, where each nitrogen atom is bonded to a phenyl group, a phenylene group, and biphenylene group. The polyarylamine compound is obtained by reacting N,N'-diphenylbenzidine and p-diiodobenzene in the presence of potassium carbonate and a copper powder. The analytical calculation for $C_{120}H_{89}N_8I$ is C, 80.4; H 5.1; N, 6.3; I, 7.2. Found C, 80.2; H 6.0; N 6.1; I, 8.0. Based on the chemical composition $C_{120}H_{89}N_8I$, the molecular weight of the polyarylamine is 1,768, which is within the range of 1,500 to 4,000 recited in instant claim 2. Based on the analytical calculation of Polymer No. 1 disclosed by Fox, it is reasonable to conclude that the polyarylamine compound is present in polymeric No. 1 composition in an amount of 90 to 100 % by weight as recited in instant claim 2. The burden is on

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applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

Fox does not identify polymeric No. 1 as a charge transporting material as recited in instant claim 3. However, as discussed above, the polyarylamine compound in polymer No. 1 meets formula (2) recited in instant claim 2. Thus, it is reasonable to conclude that the polymer No. 1 of Fox is a charge transporting material. The burden is on applicants to prove otherwise. Fitzgerald, supra.

Although Fox only exemplifies a polyarylamine compound comprising 7 nitrogen atoms, where each nitrogen atom is bonded to a phenyl group, a phenylene group, and biphenylene group, Fox teaches that the polyarylamine compound can have from 1 to 12 units, where each unit comprises a nitrogen atom. See Fox, col. 2, lines 19-50, and reference claims 1 and 5. Thus, a person having ordinary skill in the art would readily recognize that Fox anticipates electrophotographic photosensitive members comprising polyarylamine compounds that meet chemical formulas (1), (3), (4), and (5) recited in instant claims 1, 3, 4, and 5, which comprise 6, 8, 9, and 10 nitrogen atoms, where each nitrogen atom is bonded to a phenyl, a phenylene and biphenylene group.

15. Claims 16-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Fox.

Fox discloses electrophotographic photosensitive members as described in paragraph 14 above, which is incorporated herein by reference.

Instant claims 16-20 are written in product-by-process format. Fox does not explicitly disclose that the polyarylamine compounds are synthesized by successive synthesis as recited in instant claims 16-20. However, as discussed in paragraph Fox's polyarylamine compounds appear to meet the compositional limitations recited in the instant claims. Accordingly, polyarylamine compounds disclosed by Fox appear to be the same or substantially the same as the polyarylamine compounds made by the method recited in the instant claims. The burden is on applicants to prove otherwise. In re Marosi, 218 USPQ 289 (Fed. Cir. 1983); In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985); MPEP 2113.

16. Claims 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fox.

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Fox discloses an electrophotographic photosensitive member as described in paragraph 14 above, which is incorporated herein by reference.

Fox does not explicitly disclose that the polymeric composition comprises 100 % by weight of the polyarylamine compound as recited in the instant claims. In synthesis example 1, Fox purifies the polyarylamine compound by chromatography. As discussed in paragraph 14, the analytical calculation for the resulting polyarylamine compound, $C_{120}H_{89}N_8I$, is C, 80.4; H 5.1; N, 6.3; I, 7.2. Found C, 80.2; H 6.0; N 6.1; I, 8.0. Fox further discloses that photosensitive members comprising said polyarylamine compound have "improved permanence" in storage stability. Col. 8, lines 3-9.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Fox, to further purify the polyarylamine compound such that the polyarylamine compound is present in the amount of 100 wt% of the polymeric composition, and to use the resulting polyarylamine compound in the photosensitive member disclosed by Fox, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic photosensitive member having the benefits disclosed by Fox.

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17. Claims 21-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,430,526 (Ohkubo) combined with Fox.

Ohkubo discloses an electrophotographic image forming apparatus comprising all the components recited in instant claims 26-30, but for the particular photosensitive member. Fig. 1 and col. 2, line 56, to col. 3, line 56. The apparatus shown in Fig. 1 comprises an electrophotographic sensitive member 3, contact charging member 4, an exposure unit that comprises a laser beam L, a developing unit 5, a transfer unit 7, and a cleaning unit 8. Ohkubo also discloses a process cartridge which comprises all the components recited in instant claims 21-25, but for the particular photosensitive member. Fig. 2 and col. 3, line 65, to col. 4, line 8. The process cartridge shown in Fig. 2 comprises the photosensitive member 4, charging roller 4, developing device 5, and cleaning unit 8. Ohkubo discloses that the charging member is a contact charging roller as recited in the instant claims. An oscillating voltage is applied to the charging roller in the form of a DC-biased AC voltage. The peak-to-peak voltage of the oscillating voltage is not less than twice the absolute value of a "charge starting voltage" relative to the photosensitive member. Said oscillating voltage provides uniform charging. Ohkubo discloses that "uneven charging hardly occurs in a regular developer or a

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reverse development process." Col. 1, lines 36-42, col. 3, line 64, to col. 4, line 5, col. 4, lines 9-17. The components in the apparatus and process cartridge disclosed by Ohkubo are within the definition or are equivalents of the "means" recited in instant claims 21-30. See paragraph 4 above.

Ohkubo does not disclose the use of the photosensitive member recited in the instant claims. However, Ohkubo does not limit the type of photosensitive member used. See reference claim 1.

Fox discloses an electrophotographic photosensitive member comprising a photoconductive layer as described in paragraph 14 above, which is incorporated herein by reference. Fox further discloses that the photosensitive member has "improved permanence in storage stability." Col. 8, lines 3-19.

It would have been obvious for a person having ordinary skill in the art to use the photoconductive layer disclosed by Fox as the photosensitive layer on the conductive support in the apparatus and process cartridge disclosed by Ohkubo, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic apparatus and process cartridge that have improved storage stability.

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18. Claims 1, 6, 21, and 26 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 2004/0048179 A1 (Tanaka'179).

Tanaka'179 discloses an electrophotographic photoconductor comprising an electrically conductive support and a photoconductive layer comprising a polyarylamine compound as the charge transporting material. See synthesis example 2 in paragraphs 0089-0092, and example 2 in paragraph 0110. The polyarylamine compound of synthesis example 2 comprises the units CT-4 and CT-76 in a compositional ratio of 1:1. The polyarylamine compound has a Mw of 1,700 and a polydispersity, Mw/Mn ratio, of 1.05. The CT-76 unit comprises a dibenzofuranylene group. See CT-4 at page 3 and CT-76 at page 10. The unit CT-4 and the unit CT-76 have molecular weights of 271 and 285, respectively. The molecular weights were calculated from the chemical structures of CT-4 and CT-76 shown at pages 3 and 4, respectively. From the information disclosed in synthesis example 2 and the molecular weights of the units, the polyarylamine compound of synthesis example 2 appears to comprise 3 units of CT-4 and 3 units of CT-76. Thus, it is reasonable to presume that the polyarylamine compound of synthesis example 2 is within the compositional limitations of formula (1) recited in instant claims 1 and 6. In addition,

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because the polyarylamine compound has a polydispersity 1.05, it is also reasonable to presume that charge transferring material comprises from 90 to 100 wt% of the polyarylamine compound of synthesis example 2. The burden is on applicants to prove otherwise. Fitzgerald, supra.

Tanaka'179 further discloses that the photosensitive member described above may be used as electrophotographic photosensitive member in an image forming apparatus or in a process cartridge. Tanaka'179 discloses that the image forming apparatus comprise the electrophotographic photosensitive member 1, contact charging member 3, an exposure unit that comprises a laser beam, a developing unit 5, a transfer unit 6, and a cleaning unit 7. Figure and paragraphs 0078-0080 and 0082. The process cartridge comprises all the components recited in instant claim 21. Figure and paragraphs 0083. The components in the apparatus and process cartridge disclosed by Ohkubo are within the definition or are equivalents of the "means" recited in instant claim 21 and 26. See paragraph 4 above.

19. Claim 16 is rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tanaka'179.

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Tanaka'179 discloses electrophotographic photosensitive members as described in paragraph 18 above, which is incorporated herein by reference.

Instant claim 16 is written in product-by-process format. Tanaka'179 does not explicitly disclose that the polyarylamine compound is synthesized by successive synthesis as recited in instant claim 16. However, as discussed in paragraph 18 above, the polyarylamine compound of synthesis example 2 appears to meet the compositional limitations recited in instant claim 1, from which claim 16 depends. Accordingly, the polyarylamine compound disclosed by Tanaka'179 appears to be the same or substantially the same as the polyarylamine compound made by the method recited in the instant claim. The burden is on applicants to prove otherwise. Marosi, supra; Thorpe, supra; MPEP 2113.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (703) 872-9306.

Any inquiry of papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLD

Sep. 12, 2004

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